Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2017

Subject Code: 2171913 **Date:02/11/2017**

Subject Name: Metal Forming Analysis(Department Elective - I)

Time: 10:30 AM TO 01:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			MARKS
Q.1	(a)	Explain clearance in sheet metal operation.	03
	(b)	How do you represent strain hardening effect?	04
	(c)	State general advantages of metal forming.	07
Q.2	(a)	Define (i) dry drawing (ii) wet drawing (iii) tube drawing.	03
	(b)	State difference between hot forming and cold forming.	04
	(c)	What do you understand by camber of sheet and camber of roll?	07
		OR	
	(c)	Explain two dimensional Mohr's Stress circles.	07
Q.3	(a)	What do you understand by shear on punch and die?	03
	(b)	Explain spring back effect in bending process.	04
	(c)	State and prove Hencky's First theorem.	07
		OR	
Q.3	(a)	Define angle of bite and discuss its effect in rolling process.	03
	(b)	State various factors which affect the FLD (Forming Limit Diagram).	04
	(c)	Explain VonMises & Tresca theory of yielding.	07
Q.4	(a)	State types of rolling mills used in rolling process.	03
	(b)	Differentiate direct and indirect extrusion process.	04
	(c)	What is drawability? List and discuss factor affecting to drawability.	07
		OR	
Q.4	(a)	What is upset forging?	03
	(b)	What are the benefits of hydrostatics extrusion process?	04
	(c)	Explain Isotropic and Kinematic work hardening with neat sketches.	07
Q.5	(a)	Why friction measurement is necessary in forming process?	03
	(b)	How is impression die forging different from closed die forging.	04
	(c)	A circular cylinder of 100 mm diameter and 160 mm height is compressed to 40 mm height between two flat dies at 1000^0 C. taking that there is a sticking friction over the entire contact are of disc, determine the maximum die pressure and average die pressure. The yield strength at 1000^0 C is 75 N/mm^2.	07
		OR	
Q.5	(a)	Discuss on materials used for making wire drawing dies.	03
	(b)	State difference between compound and progressive dies.	04
	(c)	How does hydrostatic pressure affect the yield strength of metal?	07